
 <p><b>Pollution Prevention</b> Case Study</p>	<p align="center"><b>Broadway of Green Bay</b></p> <p align="center"><b>Installation of a Dry Downdraft Booth for Auto Painting</b></p>
<b>Standard Industrial Classification (SIC)</b>	Automotive Repair Services and Parts/7500
<b>Type of Waste</b>	Volatile Organic Compounds (VOCs)
<b>Strategy</b>	Process Modification
<b>Company Background</b>	Broadway of Green Bay is an automobile dealership and repair center in business since 1916. It is based in Green Bay Wisconsin with 180 employees.
<b>Original Process</b>	A cross-flow paint booth process was originally used and paint was air cured. Broadway could only repaint one vehicle per day. Spot painting was done outside of the paint booth.
<b>Motivation</b>	The greatest motivation was to improve the quality of production
<b>Pollution Prevention Process</b>	Broadway installed a downdraft, dry painting booth with an air filtering system. Vehicles are placed in the booth, spray painted, and baked at about 147 degrees Fahrenheit. All painting (both spot and complete car) is now done inside the booth. Clean air enters the booth from outside the building and circulates through the booth. Air pollutants are controlled with floor and ceiling filters. The filters are periodically vacuumed to remove dust particles. Seven vehicles can be completely painted each day.
<b>Stage of Development</b>	Broadway has installed one booth and is in the process of installing a second booth to increase production.
<b>Material/Energy Balance</b>	<p><b>Original Process</b></p> <p><b>Feedstock</b> Paints were mixed with a thinner and applied to the vehicle using a pressurized spray gun.</p> <p><b>Waste</b> VOC air emissions and solid waste</p> <p><b>Disposal</b> Filters were cleaned monthly, changed once per year, and disposed of as solid waste to a landfill. Thinners were recycled by a "paint still" and then reused through a recycler. Excess paint from the paint still was then allowed to air dry (harden) and taken to a landfill as solid waste.</p> <p><b>Pollution Prevention Process</b></p> <p><b>Feedstock</b></p>

	<p>Paints are mixed with thinner in a high volume low pressure (HVLV) spray gun. The HVLV spray guns reduce the amount of paint released to the air.</p> <p><b>Waste</b> Air pollutants (VOCs) and solid waste. Air pollutants are drawn through one set of filters from incoming air sources and two sets of filters from the exhausted air.</p> <p><b>Disposal</b> Filters are disposed as solid waste to a landfill. Thinners are recycled in a paint still and reused. Still bottoms (thinner recycler waste) are disposed of through a service contract with a hazardous waste management company. Excess paint is used as a base-coat color when painting other vehicles; reducing waste paint. Vacuum filter residue is disposed of as solid waste and removed to a landfill.</p>
<b>Economics</b>	<p><b>Capital Costs</b> Initial downdraft paint booth: \$37,000 Installation: \$73,000 (includes paint room addition, prep areas and fascia) Second downdraft paint booth (turn-key system): \$42,000 Installation: \$12,000 Total: 164,000</p> <p><b>Operation/Maintenance Costs</b> Floor filters: \$60.00/booth (replaced every three weeks). Bag filters: \$320.00/booth (replaced every six months) Ceiling filters: \$900.00/booth (replaced once per year) (Total annual cost) \$5,600.00</p> <p><b>Payback Period</b> Seven years for each booth</p>
<b>Benefits</b>	<p>The new paint booth reduces labor and has dramatically improved the quality of production. Cars can now be painted at Broadway with quality equivalent to that of the factory. The booth has increased production 75 percent and decreased production time. (From being able to handle one vehicle to seven vehicles at a time). In addition, the new paint booth releases fewer VOCs to the environment and improves the air quality for employees at Broadway and the nearby community.</p>
<b>Obstacles</b>	<p>The baking time in the booth must be set lower than would be at the factory because plastics and other temperature-sensitive materials in the car could otherwise be damaged.</p>
<b>Technology Transfer</b>	<p>It is available commercially and can be easily adapted for many different types of uses.</p>
<b>Other Pollution Prevention Programs</b>	<p>Broadway uses waste oil to heat the facility during the winter (up to 85% of heat during the winter). Broadway uses biodegradable soap for</p>

	<p>washing floors and has a self-contained cleaning water/treatment system that drains the water and puts it into a holding tank. The non-hazardous sediments contain soaps and oils which are removed and sent to a landfill. The water is reused. Broadway uses reusable rags and launders them instead of using disposable paper wipes. The company has also installed a filter system that maintains indoor air quality and reduces worker exposure to air pollutants. Broadway uses a computerized paint mixing system that reduces the amount of waste-paint generated by mixing only what is needed. Broadway has been an inspiration to other vehicle maintenance shops. The company participated in a DNR Vehicle Maintenance Workshop in Appleton in which they described their aqueous cleaning system to over 50 workshop participants. Their presentation alleviated concerns about the effectiveness of this type of equipment.</p>
<b>Company Address</b>	<p>Broadway of Green Bay 2700 S. Ashland Ave. Green Bay, Wisconsin 54306-2366</p>
<b>Contact Person</b>	<p>Mike Dalebroux 414/498-6677</p>
<b>Additional Publications</b>	<p>Replacing Acetone Solvent with an Aqueous Parts Cleaner (publication TS-037).</p>
<b>Pollution Prevention Resources</b>	<p><b>Free, On-site Technical Assistance</b> University of Wisconsin Extension Solid and Hazardous Waste Education Center Milwaukee area: 414/475-2845 Remainder of state: 608/262-0385</p> <p><b>Pollution Prevention Information Clearinghouse</b> Wisconsin Department of Natural Resources Cooperative Environmental Assistance 608/267-9700 or e-mail: cea@dnr.state.wi.us</p>
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 30%;">  </div> <div style="width: 60%; text-align: center;"> <p><b>Bureau of Cooperative Environmental Assistance</b>  <b>Wisconsin Department of Natural Resources</b>  <b>P.O. Box 7921</b>  <b>Madison, WI 53707</b>  <b>608/267-9700</b></p> </div> <div style="width: 10%; text-align: right;"> <p>PUBL-TS-038 95</p> </div> </div>	